

Effect of the Cost of Expert Systems Implementation on the Usefulness of Accounting Information System

Mohannad Akram Ahmad
Irbid National University
Accounting and Information System Department
Jordan

Farah Hanna Zawaideh
Irbid National University
Computer information System Department
Jordan

Abstract –

The aim of this paper is to investigate the effect of expert systems cost on the usefulness of accounting information system (AIS) for effective organizational performance. AIS is the whole of the related components that are working together to collect, store and disseminate data for the purpose of planning, control, coordination, analysis and decision making. Therefore, we examined the impact of expert systems cost on AIS usefulness for organizational performance such as performance management and financial performance. The results of this study show that although AIS expert systems are quite expensive, AIS is very useful and effective on organizational performance as seen by the sample taken.

Keywords – AIS; Expert Systems Cost; Organizational performance

1- Introduction

Accounting Information Systems (AIS) are described to be a tool which, usually merged into the field of Information Technology systems (IT) (i.e., design of AIS expert systems), are useful and helpful in the management of organizations economical and financial performance. But the chance of creating and applying accounting information systems has been increased as the world stepped into the era of advanced technology [13], and AIS became essential to all organizations [6], [41]. Accounting Information Systems are defined to be a system constructed from a group of related components put together to collect information and data and get them transformed into financial data to be used by decision makers [36]. For better understanding of the term ‘Accounting Information System’, the three words ‘Accounting’, ‘Information’ and ‘System’ would be explained separately.

Accounting is identified into these three components, namely information system, “language of business” and source of financial information [41].

Information is defined as a valuable data processing which provides the basis for decisions making, taking action and fulfilling legal obligation [4].

System is an integrated entity, where the framework is focused on a set of objectives [4].

For facing continuous changes in the environment, achieving a stronger, more flexible corporate culture, this can be done by increasing AIS investment, usually by implementation of AIS expert systems. An expert system is a computer program which attempts to replicate the decision making process of an expert. Any Expert System consists of two major components; knowledge base and the inference engine. An expert usually uses specialized knowledge to formulate a decision; this knowledge builds the knowledge base, it is represented by a set of IF/THEN/ELSE rules which reflect the expert’s responses to identified issues. The application is guided through the rules to get to a decision with a quality close to expert’s decisions, by the problem-solving method, this represents the interface engine. To build an expert system, the knowledge base and an inference engine, designer must be developed.

2- PROBLEM

In general organizations gained so many advantages as a result of using accounting information systems especially using computerized AIS’s (i.e., AIS Expert systems).

One of the most important benefits of accounting information systems is tasks processing speed. Data is entered once and can be used again and again in by literally pressing a button. Corrections and modifications are easily done, with reports generated right afterward which is impossible with manual accounting systems. When data is entered to any accounting system, whether it is manual or computerized, it must be classified it in detail. For example, a transaction could be sales

revenue or interest revenue. The classification process is easily accomplished using information systems; simply a drop-down can give you the choice of the proper category. Reports involving classifications can also be quickly generate. Without AIS, this process takes much more time. The chances of losing data are reduced once it has been entered into a computer, especially when regular system backups are performed. Paper pads can be lost or damaged more easily. Data can be saved on the Internet, where it will not only be accessible anytime you need it but will also still be secure even if your computer is lost or damaged. These advantages give a good idea about the usefulness and effectiveness of accounting information systems for corporations in saving time and cost, improving productivity and easing communication between different departments in a single organization. It also gives the idea that AIS's are flawless, which is not true, because even though AIS have so many advantages but they have their problems too. The most important problem to be mentioned is the cost of AIS expert systems implementation. The issue of the high cost of AIS expert systems implementation is considered an issue of thought by almost every organization, especially small and non-profit businesses. Thus the problem at hand is to answer the question; does the benefits of accounting information systems' expert systems, cover the high cost of its implantation?

3- RELATED WORK

There are not many researches about the issue of AIS's expert systems cost effect on the usefulness of AIS, comparing the advantages of AIS to its cost. In [4] the author lists some great advantages of accounting information systems, and way of using and implementing expert systems, but he did not go towards its cost or the effect of its cost. The author in [11] evidence on the relationship between accounting information systems and the improvement of management, and the financial improvement.

4- METHODOLOGY

This paper considers a hypothesis represents the comparison between accounting information systems advantages and the issue of the high implementation cost:

1. Accounting information systems help stabilizing company's financial states.
2. Accounting information systems help improving productivity of companies.
3. The use of accounting information systems help reducing cost (time and manpower).
4. The use of accounting information systems help protection financial data.
5. Accounting information systems are very useful and helpful regardless of their cost.
6. Accounting information systems are very useful and helpful, but it depends on the type of business besides the cost issue creates a big problem.
7. The advantages of implementation of accounting information systems expert systems do not cover its cost.

The estimated results of the questionnaire in performed in this paper, states that the use of any expert system will improve a company's productivity, financial development, financial management will be organized and the cost of time and manpower to be reduced.

This paper flow the following procedure research, starting from reach problem definition and ending to results of this paper:

- Problem definition and formulation, including stating the objectives.
- Lateral survey to get up to date in the researches that concerns in that field.
- Stating the hypothesis
- Building the questionnaire and questionnaire application plan in Jordan field
- Analyzing the data and generating results.

Table-1: sample of questionnaire that performed for the hypothesis of this paper

O #	Question	Answer			
		Sure	Yes	May be	No
1	Hepo1				
2	Hepo2				
3	Hepo3				
4	Hepo4				
5	Hepo5				
6	Hepo6				
7	Hepo7				
8	Additions				

5- RESULTS

This paper studies the usefulness of accounting information systems after looking at the cost of expert systems implementation. A survey is run on Jordanian organizations.

As seen in the table below, 75% of the sample that did the survey assured that accounting information systems help stabilizing their financial states, 23% agreed with the hypothesis, 2% were not sure about it while non dis agreed. This supports our first hypothesis.

As for our second hypothesis, 40% of the sample that did the survey assured that accounting information systems help improving their productivity, 31% agreed with the hypothesis, 15% were not sure about it while 14% dis agreed.

Our third hypothesis said that the use of accounting information systems help reducing cost (time and manpower), 41% of the sample assured this, and 37% agreed with it, 7% were not sure while 15% disagreed.

We then said that the use of accounting information systems help protection financial data, which is our forth hypothesis. 14% assured this, 39% agreed with it, 37% were not sure about it while 10% disagreed.

The next hypothesis says that accounting information systems are very useful and helpful regardless of their cost, 1% assured our hypothesis, and 26% agreed with it, 40% were not sure about it while 33% disagreed.

This take us to the sixth hypothesis which says that accounting information systems are very useful and helpful, but it depends on the type of business besides the cost issue creates a big problem, 84% assured this, and 10% agreed with it, 6% were not sure, while none disagreed.

Our final hypothesis says that the advantages of implementation of accounting information systems expert systems do not cover its cost, 1% assured it, and 2% agreed with it, 50% were not sure, while 47% disagreed with it.

Table-2 shows the questionnaire result of the hypothesis.

Hypothesis	Answer			
	Sure	Yes	May be	No
Hypo-1	75%	23%	2%	0%
Hypo-2	40%	31%	15%	14%
Hypo-3	41%	37%	7%	15%
Hypo-4	14%	39%	37%	10%
Hypo-5	1%	26%	40%	33%
Hypo-6	84%	10%	6%	0%
Hypo-7	1%	2%	50%	47%

6- CONCLUSION

When accounting information systems expert system are implemented probably, a noticeable improvement in the organization performance occurs.

Applying accounting information systems can reduce the cost for most companies, while improving their productivity and increasing their reliability.

The use of expert systems can improve the financial state of the firm, and improve its financial management.

As shown in results and study procedure, the effect of the expert systems implementation on the usefulness of accounting information systems is rather noticeable.

REFERENCES

- [1] Abu-Jarad, Y. I., Nikbin, D., & Nor Aini, Y. (2010). A Review Paper on Organizational Culture and Organizational Performance. *International Journal of Business and Social Science*, 1(3).
- [2] Al Shamsi, J. (2007). *The Role of Judiciary in United Arab Emirates*. IALS Conference, Learning from Each Other: Enriching the Law School Curriculum in an Interrelated World.
- [3] Armstrong, N., & Baron, A. (1998). *Performance management – the new realities*. The institute for personnel development, London.

- [4] Bhatt, G. D. (2001). Knowledge management in organizations: examining the interaction between technologies, techniques, and people. *Journal of Knowledge Management*, 5(1), 68-75.
- [5] Boockholdt, J. (1999). *Accounting Information Systems Transaction Processing and Control*. The Mac-Graw-Hill companies, 5, 433-444.
- [6] Borthick, A. F., & Clark, R. L. (1990). Making accounting information systems work: An empirical investigation of the creative thinking paradigm. *Journal of Information Systems*, 4(3), 48-62.
- [7] Boulianne, E. (2007). Revisiting fit between AIS design and performance with the analyzer strategic-type. *International Journal of Accounting Information Systems*.
- [8] Chenhall, R.H. (2003). Management control systems design within its organizational context: findings from contingency-based research and directions for the future. *Accounting, Organizations and Society*, 28(2-3), 127-168.
- [9] Conway, N. (2009). *A Course Module on Incorporating Environmental and Social Costs into Traditional Business Accounting Systems*, full cost accounting. Carnegie Mellon University Pittsburgh, PA 15213.
- [10] Downes, A., & Barclay, N. (2008). *The Role of Performance Management in Organizations*. An excerpt from The Rational Guide to Planning with Microsoft Office Performance Point Server 2007, Mann Publishing Group (978-1-932577-42-6), 8-12.
- [11] Dubai Financial Market. (2000, March 26). *Overview about Dubai Financial Market*. Retrieved from <http://www.dfm.ae/pages/default.aspx?c=801>
- [12] Dubai Financial Market. (2011). *Listed companies at Dubai Financial Market*. Retrieved from <http://www.dfm.ae/pages/default.aspx?c=1010>
- [13] El louadi, M. (1998). The relationship among organisation structure, information technology and information processing in small Canadian firms. *Canadian Journal of Administrative Science*, 15(2), 99-180.
- [14] Essex, P. A., & Magal, S. R. (1998). Determinants of Information Centre Success. *Journal of Management Information Systems*, 15(2), 95-117.
- [15] Flynn, D. (1992). *Information systems Requirements: Determination and Analysis*. Mac-Graw-Hill Book Company.
- [16] Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39 - 50. <http://dx.doi.org/10.2307/3151312>
- [17] Gerdin, J., Greve, J. (2004). Forms of contingency fit in management accounting research-a critical review. *Accounting, Organizations and Society*, 29, 3-4, 303-326. [http://dx.doi.org/10.1016/S0361-3682\(02\)00096-X](http://dx.doi.org/10.1016/S0361-3682(02)00096-X)
- [18] Grande, U. E., Estebanez, P. R., & Colomina, M. C. (2010). The impact of Accounting Information Systems (AIS) on performance measures: empirical evidence in Spanish SMEs. *The International Journal of Digital Accounting Research*, 11(2011), 25 - 43.
- [19] Gullkvist, B. (2002). Towards Paperless Accounting and Auditing. *E-Business Research Center*, Finland.
- [20] Hongjiang, Xu. (2010). Data quality issues for accounting information systems implementation: Systems, stakeholders, and organizational factors. *Journal of Technology Research*, 1- 5.
- [21] Huang, Huan-Tsae, Lee, Y. W., & Wang, R. Y. (1999). *Quality information and knowledge*. Prentice Hall PTR.

- [22] Ittner, Larcker, Bouwens, & Abernethy. (2000). Quality Strategy, Strategic Control Systems, and Organizational Performance. *Accounting, Organizations and Society*, 22(3/4), 293-314.
- [23] Kharuddin, S., M.Z. Ashhari, & Nassir, M.A. (2010). Information System and Firms' Performance: The Case of Malaysian Small Medium Enterprises. *International business research*, 3(4), 33.
- [24] Kouser, R., Awan, A., Rana, G., & Shahzad, F. (2011). Firm Size, Leverage and Profitability: Overriding Impact of Accounting Information System. *Journal of Management and Business Review*, 1(10), 58-64.
- [25] Langfield-Smith, K. (1997). Management Control Systems and Strategy: A critical Review. *Accounting, Organizations and Society*, 22(2), 207-232. [http://dx.doi.org/10.1016/S0361-3682\(95\)00040-2](http://dx.doi.org/10.1016/S0361-3682(95)00040-2)
- [26] Miles, R.E., & C.C. Snow (1978). *Organization strategy, structure and process*. Mc Graw-Hill, New York.
- [27] Miller, A., Boehlje, M., & Dobbins, C. (2001). *Key Financial Performance Measures for Farm General Managers*. Department of Agricultural Economics, Purdue University, ID-243, 5-10.
- [28] Nicolaou, A., (2000). A Contingency Model of Perceived Effectiveness in Accounting Information Systems: Organizational Coordination and Control Effects. *International Journal of Accounting Information Systems*, 1, 91-105.
- [30] Performance Management. (2011). In *Wikipedia, the free encyclopedia*. Retrieved from http://en.wikipedia.org/wiki/Performance_management
- [31] Pierre J. R., Timothy M. D., George S. Y., & Gerry, J. (2008). Measuring Organizational Performance as a Dependent Variable: A Reviews Towards Methodological Best Practice. Forthcoming *Journal of Management*.
- [32] Porter, M.E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. The Free Press, New York.
- [33] Romney, Marshall B., Steinbart, P. J., & Cushing, E. B. (1997). *Accounting Information System*. Seventh Edition, Addison-Wesley.
- [34] Sadia M. (2011). The Impact of Competitive Advantage on Organizational Performance, *European Journal of Business and Management*. ISSN 2222-1905, 3(4).
- [35] Sajady, H., Dastgir, M., & Hashemnejad. (2008). Evaluation of the effectiveness of accounting information systems. *International Journal of Information Science & Technology*, 6(2).
- [36] Salehi, M., Rostami, V., & Mogadam, A. (2010). Usefulness of Accounting Information System in Emerging Economy: Empirical Evidence of Iran. *International Journal of Economics and Finance*, 2(2).
- [37] Teresa, M., & Auriat, N. (2005). *Quantitative research methods in educational planning, Questionnaire design*. International Institute for Educational Planning/UNESCO.
- [38] The Ministry of Finance and Industry (2005). *MOFI introduces new federal accounting information system*. Retrieved from <http://www.ameinfo.com/50938.html>
- [39] Thomas, V., & Kleiner, B. H. (1995). New developments in computer software. *Industrial Management & Data Systems*, 95(6), 22-26.
- [40] University of California. (2009). *Understanding internal controls*. Retrieved from <http://www.ucop.edu/ctlacct/under-ic.pdf>
- [41] Vitez, O., & Baligh, H. H. (2011). *Organization Structures: Theory and Design, Analysis and Prescription*.

Information and Organization Design Series. New York: Springer.

[41] Wilkinson, J. W. (1993). *Accounting Information Systems: Essential Concepts and Applications*. Second Edition. New York: John Wiley & Sons Inc.

[43] Yang, H. M., Lin, S. W., & Koo, L. T. (2011). The impact of computerized internal control adaptation on operating performance. *African Journal of Business Management*, 5(20).

[44] Zulkarnain, M. S. (2009). Accounting Information Systems (AIS) and Knowledge Management: A Case Study. Department of Accounting and Finance, Faculty of Economics and Management University Putra Malaysia. *American Journal of scientific research*, ISSN 1450-223X